CLAIMS

1. A process for forming a stent of a polymer material, the process comprising the steps of:

a) forming a generally tubular stent;

b) radially expanding the stent to produce an expanded diameter stent; and then,

c) annealing the expanded diameter stent to shrink its diameter to a reduced diameter.

2. A process as in claim 1 further comprising at least one time repeating steps b) and c) in sequence.

3. A process as in claim 1 wherein in step a) the stent is formed by molding the polymer material.

4. A process as in claim 3 wherein the polymer material is thermoplastic.

5. A process as in claim 4 wherein the polymer material is biodegradable.

6. A process as in claim 1 wherein the polymer material is selected from the group consisting of poly(alpha-hydroxy acid), polylactic acid-polyethylene oxide copolymers; modified cellulose; collagen or other connective proteins; adhesive proteins; hyaluronic acid; polyanhydrides; polyphosphoesters; poly(amino acids); copolymers thereof; and mixtures of any of said materials.

7. A process as in claim 6 wherein the polymer material is a poly(alpha-hydroxy acid) selected from the group consisting of homopolymers and copolymers of polylactide (PLA), poly-L-lactide (PLLA), poly-D-lactide (PDLA), polyglycolide (PGA), polydioxanone, polycaprolactone, poly(hydroxybutyrate),

polygluconate, and mixtures thereof.

8. A process as in claim 1 wherein the step b) is performed at a temperature below the glass transition temperature of the polymer material.

9. A process as in claim 8 wherein the step b) is performed at room temperature.

10. A process as in claim 1 wherein the step c) is performed at a temperature above the glass transition temperature of the polymer material.

11. A process as in claim 10 wherein the step c) is performed at a temperature within the range of about 90°C to about 150°C.

12. A thermoplastic polymer stent having a molecular orientation as obtained by a process as in claim 1.

13. A thermoplastic polymer stent having a hoopwise molecular orientation.

14. A stent as in claim 13 wherein the thermoplastic polymer is biodegradeable.

15. A process for forming a tubular article of a polymeric material, the process comprising the steps of:

a) forming a generally tubular article of said polymeric material;

b) radially expanding the article to produce an expanded diameter article; and then,

c) annealing the expanded diameter article to shrink its diameter to a reduced diameter.

and wherein at least one time steps b) and c) are repeated in sequence.

16. A medical device adapted for body lumen navigation and/or treatment produced by the process of claim 15.

17. A process for forming a tubular article of a polymeric material, the process comprising the steps of:

a) forming a generally tubular article of said polymeric material;

b) radially expanding the article to produce an expanded diameter article; and then,

c) annealing the expanded diameter article to shrink its diameter to a reduced diameter

and wherein the polymer material is a biodegradable polymer.

18. A process as in claim 17 wherein at least one time steps b) and c) are repeated in sequence.

19. A process as in claim 17 wherein the polymer material is selected from the group consisting of poly(alpha-hydroxy acid), polylactic acid-polyethylene oxide copolymers; modified cellulose; collagen or other connective proteins; adhesive proteins; hyaluronic acid; polyanhydrides; polyphosphoesters; poly(amino acids); copolymers thereof; and mixtures of any of said materials.

20. A medical device adapted for body lumen navigation and/or treatment produced by the process of claim 17.

21. A process for forming a stent of a polymeric material, the process comprising the steps of:

a) forming a tube of said polymeric material;

b) radially expanding the tube to produce an expanded diameter tube;

c) annealing the expanded diameter tube to shrink its diameter to a reduced diameter; and subsequently

d) forming a stent from the annealed tube.

22. A process as in claim 21 wherein the steps b) and c) are repeated at least once before step d) is performed.

23. A process as in claim 21 wherein in step d) the stent is formed by machining or etching the reduced diameter tube obtained from step c).